

Ambient Air Monitoring Applications

Waste water treatment plants Air quality control by TRS MEDOR

Deodorization

Context & Challenges

Globally, the wastewater treatment is the first public health issue. Urban development leads to urbanization near waste water treatment plant and extension of sewerage network. These aspects induce to an augmentation of sulfur compounds (H₂S, mercaptans and sulfides) which are very corrosive, odorant and toxic. To monitor these compounds online CHROMATOTEC® offers high meteorological solutions.

At the entrance of the waste water plants, where the waste water arrives, strongly smelling and polluted air is captured and neutralized by a chemical cleaning process called "Stripping".

The correct number of chemical products needed to neutralize the polluted air has to be calculated.

Chromatotec® Solutions

TRS MEDOR ppb or ppm for up to 14 compounds

With only one instrument, it is possible to analyze up to 14 sulfur compounds. Thanks to specific sulfur detector (SSD) and AIR or N₂ carrier gas, the separation and sensitivity is excellent down to 1 ppb levels and low odor unit/m³.

The instruments are being calibrated with primary gas standard certified at ±2%. There are **no interferences** due to the gas chromatography separation and the sulfur specific detector. The analyzer is **LINEAR**: range 0 / 100 ppb.



The instruments are fully automated thanks to internal calibration (**airmoCAL**). The **VISTACHROM** software controls the analyzers, multiplexer, meteorological station and enables storage and display of the chromatograms thanks to Peak Viewer.

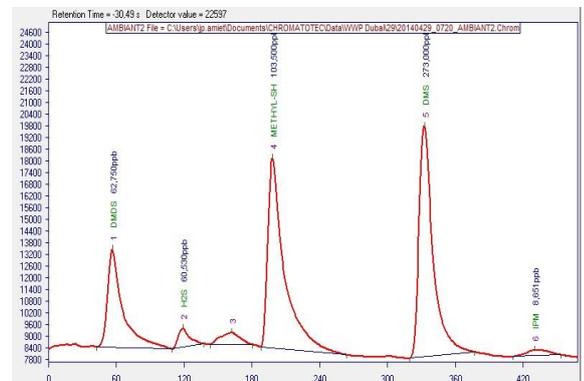
It is possible to transfer data to a data logger or modelling software with the communication protocols MODBUS RTU, JBUS, German PROTOCOL and X-Path.

TRS MEDOR system

- At the point of arrival of the wastewater at the stripping area of the plant, the polluted air is captured and thereafter passed in a circuit that neutralizes it. These odors are caused by bacteriological fermentation. Successive chemical cleanings in the deodorization towers neutralize these odors.
- The bad odors are largely due to the transformation of sulfides into H₂S by the bacteria in the fermentation process.
- Placed at the outlet of the stripping process, the TRS MEDOR measures the H₂S concentrations and pilots the adjunction of calcium nitrate. This process allows to the bacteria to have an oxygen reserve and therefore to stop sulfate transformation into sulfides and then in H₂S.

Results

- Automatic regulation of odor neutralization.
- Time needed to technically pilot the process is decreased.
- Cost savings with much less calcium nitrate used.



Analysis of deodorization tower outlet, very low H₂S but big concentration of mercaptans.



Conclusion:

TRS MEDOR, the adequate solution for in situ sulfur analysis and odor monitoring for surveillance of wastewater treatment plant:

- Fully automated with gas generator (N₂ or Air/Calibration gas)
- Data transfer to a data logger or by modem or Ethernet
- Stability and repeatability (from 1 ppb to 1000 ppm, areas and retention times)
- Linearity (from 1 ppb to 1000 ppm)
- In compliance with ISO 6326/2 norm and DIN 51855/7, no interferences
- Approval on sulfurs (ASTM D7493-08 2008)
- In standard, TRS MEDOR analyse 7 compounds H₂S, SO₂, MM, EM, DMS, DES and DMDS
- In option up to 14 sulfurs THT, H₂S, SO₂, MM, EM, DMS, IPM, TBM, NPM, MES, 2BM, DES, NBM and DMDS.
- NEW: manage meteorological station and communicate with odor modelling software.
- OPTION ppt range with a pre concentration trap for DMS/DES and DMDS.